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the use of indicators in the governance of Japanese urban transport policy

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Towards sustainable transport in Japan?

– the use of indicators in the governance of Japanese urban transport policy ^(*)

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Research topics

- How indicators are applied to measure performance in Japanese (urban) transport policy
- To what extent such indicators are used effectively to promote sustainable transport
- Focus on selected programs of the Japanese Ministry for Land, Infrastructure and Transport
- In what ways the approaches resemble or differ from 'western' ones

Overview

- Background
 - General/Conceptual background
 - Background for the present study
- Japan as an example – why?
- Research framework – indicators for sustainable transport
- Two cases
 - Policy evaluation framework in MLIT
 - 'Eco-model cities' program
- Conclusions/perspectives

Background

General background for use of indicators of 'Sustainable transport'

- Emergence of 'Sustainable Transport Paradigm'
- Emergence of 'New Public Management/Governance'
- Both often operationalized through hierarchies of **goals, targets, and indicators**
- Transport policy strongly influenced by both paradigms
- Specific adaptations differ among countries and policy areas

Background for the present study

- 12 years of research in the use and influence of indicators in sustainable transport policy and governance
 - what, why and how to measure for ST with indicators?
 - what determines use, mis-use or non-use of ST indicators?
- previous research visits to Japan (1999; 2008); six month exchange grant from Japan Society for the Promotion of Science in 2011, hosted by Tokyo Institute of Technology
- Literature review, document analysis, interviews with officials, experts and researchers
- Work in progress, initial observations

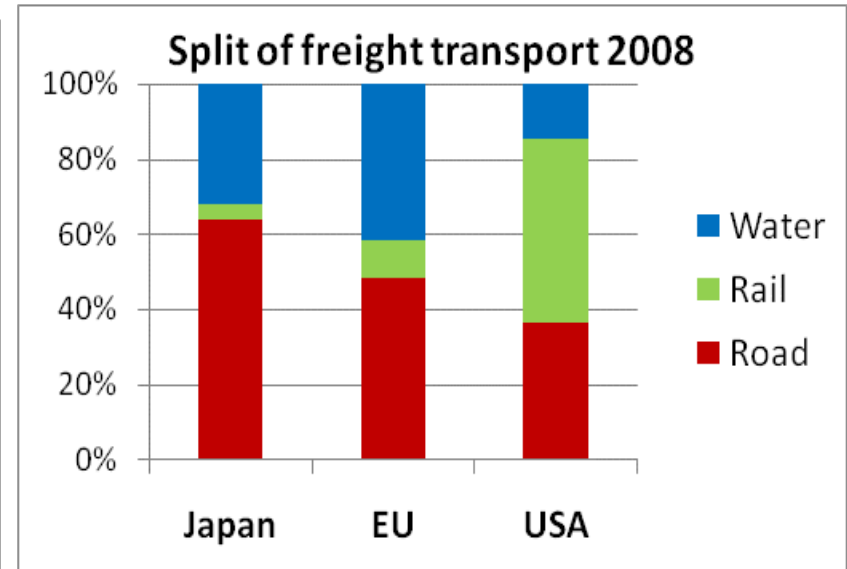
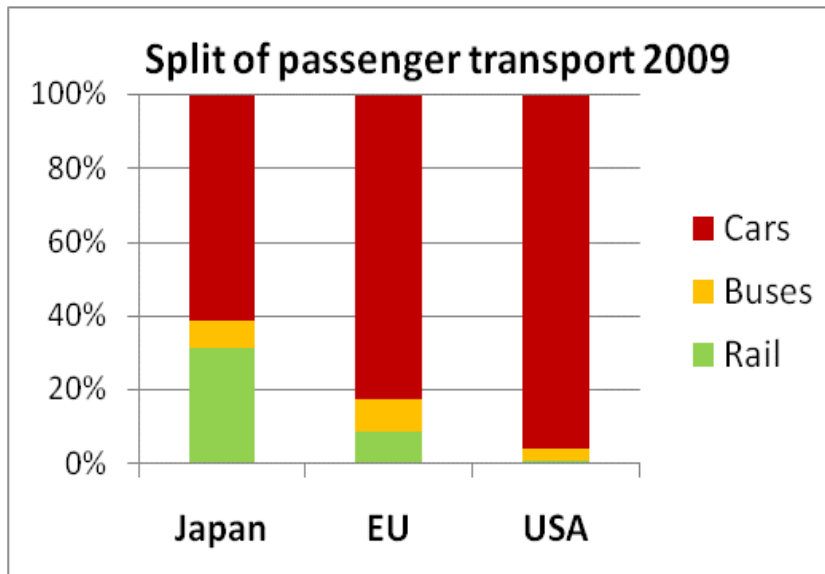
Japan as an example

Japan as an example – why? (1)

Japan is **interesting** from a sustainable transport point of view,

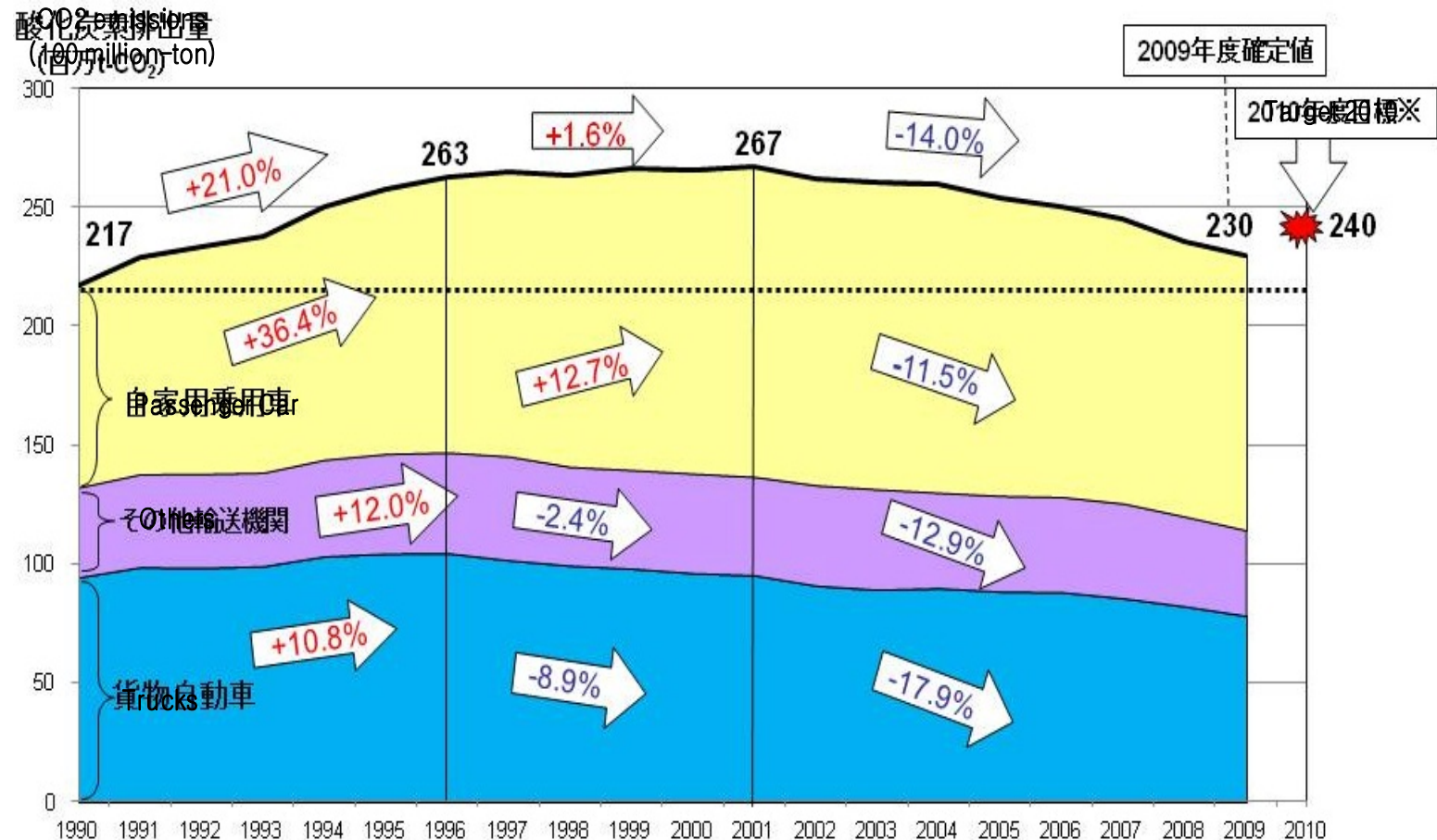
- prevalence of dense, mixed-land-use, urban areas;
- very high share of rail in passenger transport;
- significant reductions in urban air pollution and accidents;
- ten years of steady decline in transport CO₂ emissions
- successful adoption of several technological and organizational innovations
- Japanese governments and cities have made repeated commitments to sustainability and low carbon transport

Modal splits in three regions of the world



Source: DG Move Pocketbook

CO₂ Emissions from Transport Sectors in Japan



Adapted from: Ministry of Land, Infrastructure and Transportation (MLIT)

Japan as an example – why?(2)

Japan is currently facing significant **challenges** for promoting/investing in sustainable transport,

- aging and decreasing population,
- restrained economic development,
- accumulation of massive public debt
- increasing urban sprawl, decline of public transport; shift towards cars in many cities
- CO₂ reduction may not be sign of 'genuine' transition
- devastating natural disasters

=> How to promote change towards sustainable transport?

General response: governance reforms

“Faced with internal and external challenges, governments often seek new paradigms for governance and may initiate administrative reforms to enhance performance”

(Moon and Ingraham 1998)

Aspects of transport governance reforms in Japan:

- Privatization of national rail and highway companies
- General administrative reforms to make decisions more effective and integrated (e.g. forming of ‘MLIT’ in 2000)
- Creation of integrated framework for infrastructure investments (5-year ‘social infrastructure improvement program’)
- Law for policy performance evaluation procedures (2001)
- Policy/Social experiments + evaluations in several areas

Some special features for Japan

- Sustainability notion is widely integrated in policy/planning frameworks, but...
 - 'Sustainability' in Japan often linked to ageing problem, critical loss of population in some areas, and financial debt problem
 - 'Sustainability' sometimes connected to robustness towards natural disasters
 - 'Sustainable Transport' often linked to environment (EST)
- New public governance reforms adopted in Japan, but...
 - Only partial adoption of general frameworks
 - Limited reforms of bureaucracy and budget process
 - Still fairly centralised system
 - No direct link of 'performance' and 'sustainability' monitoring

Research framework – indicators for sustainable transport

Basics of the indicator tool...

- **Indicators** are understood as measurable variables that are selected for their ability to represent and communicate changes in certain phenomena of wider interest (such as sustainability), or more specific aspects of them
- **Performance** measures are understood as indicators that measure performance in regard to specified objectives, goals, or targets of organizations, policies or projects

Typical functions of indicators

- Awareness functions; using indicators to draw attention to emerging problems or possible solutions
- Communication functions, using indicators to connect with engage citizens and stakeholders
- Diagnostic functions; using indicators to analytically distinguish the influence of different variables
- Assessment functions; using indicators to interpret real or projected developments compared to desired conditions
- Decision functions; using indicators to rank performance, help selection, or allocate funds
- Accountability functions, using indicators to track responsibility; reward/punish according to performance

The real promise of indicators...

- "...is in the development of an improved decision-making and investment process, not the achievement of many arbitrary short-term targets."
(Amekudzi and Meyer 2011)
- indicators as 'learning tools'; information with the capacity to change society's behaviour ...from 'instrumental learning' to 'social learning' and 'political learning'
(Hezri 2005)
- indicators as mechanisms for monitoring and evaluation in 'transition management' ; fundamental change towards sustainability
(Geerlings et al.2011; Kemp and Rotmans 2004)

Overall perspective

- Assessment, monitoring and performance evaluation with the use of indicators are applied is part of recent transport policy governance reforms around the world, including Japan
- These mechanisms, not only offer ways to manage current policy challenges, but may also be seen as potential, if not essential, tools for promoting transitions to a more sustainable transport future

Weaknesses of the indicator tool...

- indicators often of limited accuracy, comparability, credibility, availability, or relevance for policy
- indicators may not be sufficiently connected to policy or decision making processes
- indicators may be used in purely symbolic way; as justification for decisions that have already been taken,
- reliance on indicators may spur strategic behaviour among the measured organizations/individuals
- indicators may be ignored even by intended users and decision makers
- possible conflict between 'control' and 'awareness' types of applications

Key requirements of indicator set in order to promote sustainable transport

- 1) Must capture the impacts of decisions on key areas that define sustainability, e.g. economic, environmental and social dimensions;
- 2) Must capture the causal relationships that lead to progress toward or deviation away from sustainability (e.g. through use of policy interventions); and
- 3) Must capture the level of influence or control that the responsible agencies have over the causal factors of sustainability

(adapted from: Jeon and Amekudzi 2005)

Simplified research questions - Japan

- ***Sustainability?*** To what extent do the indicators encompass three overall dimensions of sustainability, as well as specific 'local' understandings?
- ***Transformative capacity?*** To what extent are the frameworks oriented towards performance control functions, with links to policies and budgets, versus more awareness raising or symbolic functions?

Two cases

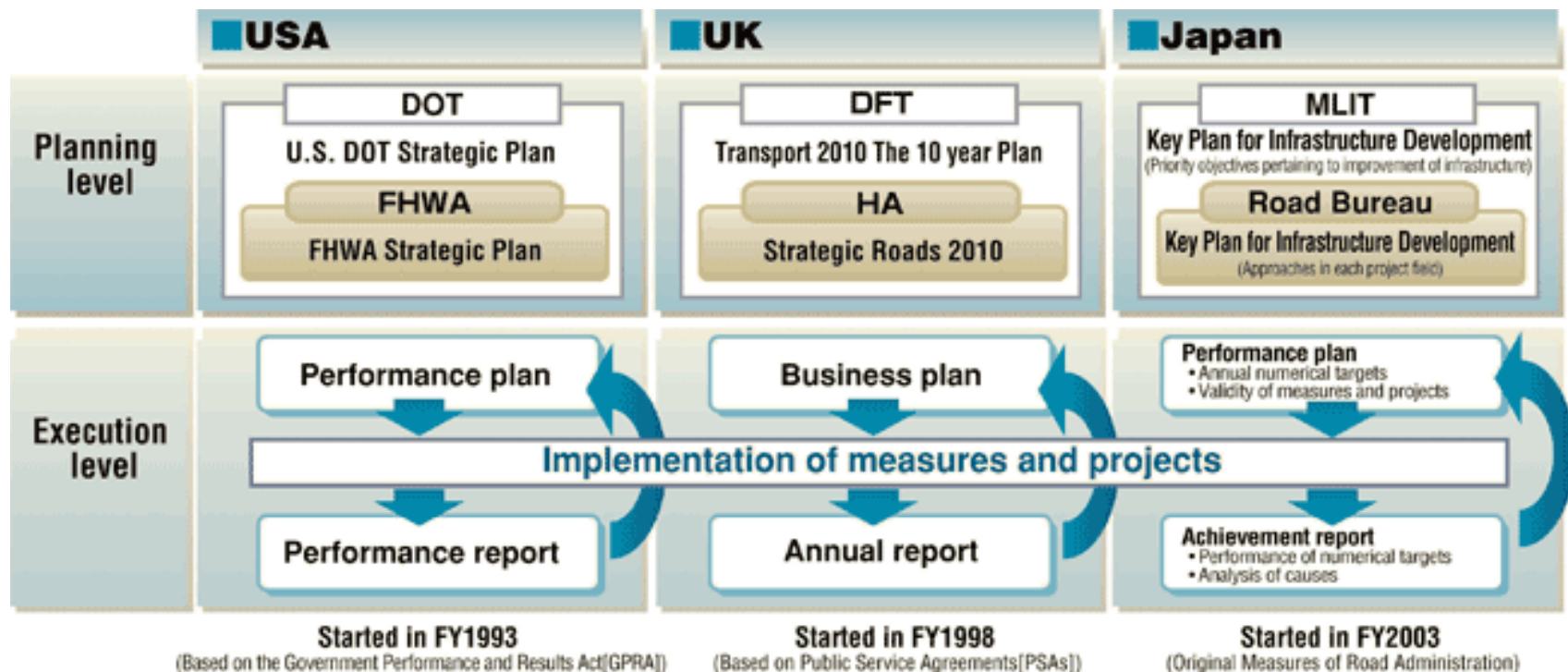
- Policy evaluation framework in MLIT**
 - 'Eco-model cities' program**

Examples of applications in Japanese transport policy areas

- **Policy evaluation framework for the MLIT/Road Bureau (ex-1)**
- Use of indicators in evaluation of 'social experiments' on road tolling in urban and rural areas
- Role of indicators in management of National and Regional Spatial Strategies
- **Use of indicators in management of 'Eco-model cities' program (ex-2)**
- Use of indicators in policies for low carbon transport system generally

Comparison with Western countries (ex-1)

... General adoption of PM in transport



Source: MLIT, Japan

Comparison with Western countries (ex-2)

...Sustainable/low carbon urban transport plans

Steps proposed in Sustainable Urban Mobility Plans, Europe (Rupprecht 2011)	Steps proposed in Low Carbon City Guidance, Japan (MLIT 2011)
<ol style="list-style-type: none"> 1. status analysis and baseline scenario; 2. definition of a vision, objectives and targets; 3. selection of policies and measures; 4. assignment of responsibilities and resources; 5. arrangements for monitoring and evaluation 	<ol style="list-style-type: none"> 1. understand and map out current situation, 2. select tentative countermeasures, 3. assess effects of measures 4. set targets 5. implement measures, and 6. regularly review and update based on Plan-Do-Check-Act approach

Policy evaluation framework in MLIT (ex-1)

- Long history of data collection for use in transport forecasts/plans (e.g. travel surveys since 1960'es)
- Performance measurement using 'PlanDoCheckAct' approach, and 'citizen's goals' proposed in 1997
- Policy evaluation made mandatory (GPEA law 2001)
- Three procedures:
 - 'Policy Assessment' performed before adoption of a policy
 - 'Policy Review' evaluating outcomes of adopted policies
 - 'Policy Check-up' annual report on goals with KPIs
- Ex: Policy 'Check-up' of 'Social Infrastructure' programs
 - 12 overall goals with around 280 indicators
 - Road Bureau partly has its own section

Project	Direction of measure	Measure	Performance indicator	Baseline results (2007)	Results in 2008	Plan target (2012)
Road construction	Vitality	Construction of trunk road network	Development rate of ring roads in three major metropolitan areas	53%	53%	69%
		Alleviation of chronic traffic congestion	Time loss due to closed railroad crossings including “perpetually closed” crossings	Approx. 1.32 million person-hours/day	Approx. 1.31 million person-hours/day	Reduction by approx. 10% (Approx. 1.18 million person-hours/day)
	Safety	Improvement of traffic safety	Incidence of death and injury accidents in road traffic	Approx. 109 accidents/100 million vehicle-km	Approx. 100 accidents/100 million vehicle-km (interim figure)	Reduction by approx. 10% (Approx. 100 accidents/100 million vehicle-km)
	Quality of life and environment	Improvement of living environment	Percentage of specially designated roads constructed or modified to be barrier-free	51%	Approx. 58% (interim figure)	Approx.75%
		Reduction of greenhouse gas emissions	CO ₂ emissions in transportation sector	254 million t-CO ₂ (2006)	236 million t-CO ₂ (preliminary figure)	240 million to 243 million t-CO ₂ (2010)
	Effective utilization of existing stock	Planned road management for safety and security	Rate of implementation of plans for service life extension of nationwide roads and bridges	28%	41%	Approx. 100%
		Effective utilization and functional enhancement of existing expressway networks	ETC utilization rate	76%	79%	85%
Traffic safety facilities development	Realization of a safe and secure road traffic environment responsive to a declining birthrate and aging population	Improvement of traffic safety	Incidence of death and injury accidents in road traffic (repeated)	Approx. 109 accidents/100 million vehicle-km	Approx. 100 accidents/100 million vehicle-km (preliminary figure)	Reduction by approx. 10% (Approx. 100 accidents/100 million vehicle-km)
		Advancing measures for pedestrians, bicycles and community roads	Deterrence rate of accident casualties among pedestrians and bicycle riders within safe-to-walk areas	—	—	Reduction by approx. 20%
			Percentage of specially designated roads constructed or modified to be barrier-free (repeated)	51%	Approx. 58% (interim figure)	Approx. 75%
		Advancing measures for trunk roads	Deterrence rate of accident casualties in high accident areas	—	—	Reduction by approx. 30%
	Realization of smooth traffic flow and congestion	Advancing measures for smooth	Time loss due to closed railroad crossings including “perpetually	Approx. 1.32 million	Approx. 1.31 million	Reduction by approx. 10% (Approx. 1.18

Review of ex-1 > Sust. transport transition?

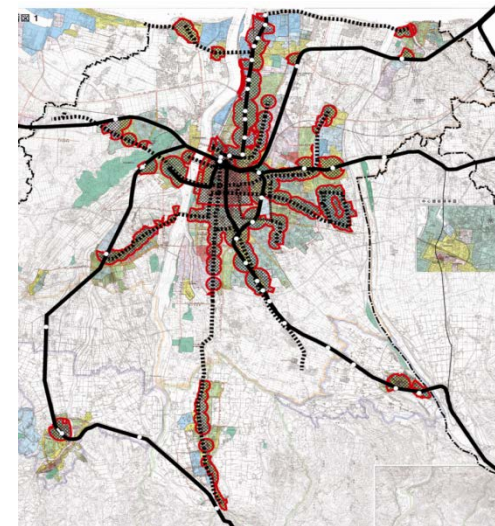
- Formally connected to sustainability via Law for 'Social Infrastructure programs' (five aims including promotion of sustainable development and environment)
 - Three general sustainability dimensions represented,
 - Goals not defined as 'sustainability' goals
 - Measure of resilience towards disasters to be developed
 - Serves formally as input to decision making, but limited opportunity to re-allocate budget according to performance for existing programs
 - Some goals are not fully under MLIT control (e.g CO₂)
 - Facing budget cuts for monitoring
- ⇒ Limited incentive for policy learning for sustainability?
- ⇒ Possibly partly symbolic function so far?

'Eco-model cities' program (ex-2)

- Eco-model cities' project initiated in 2008, with the aim to "... tackle pioneering initiatives to "...transform Japan into a low-carbon society "
- Selected cities should e.g.
 - have targets to 'drastically reduce GHGs';
 - move beyond state-of-the art to serve as models
 - have credible implementation plans
 - continuously develop new initiatives
- 82 cities applied, 13 were selected
- Performance reported annually to independent evaluation panel, publishing assessment of progress

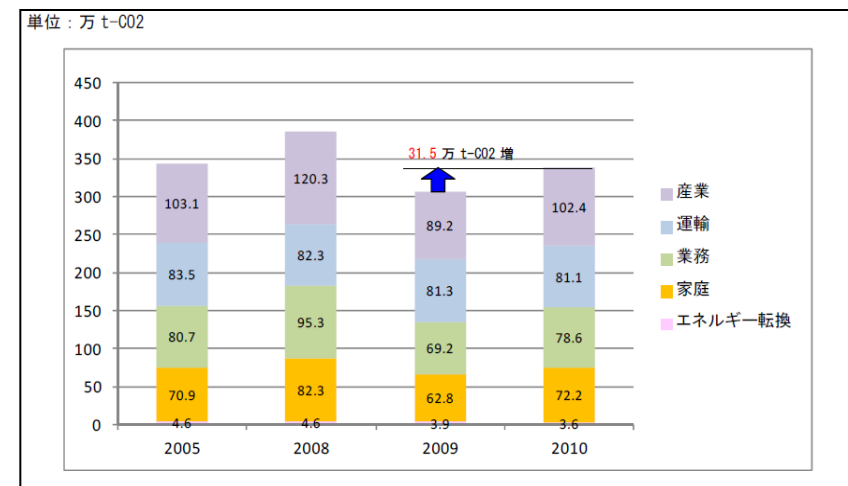
Toyama city example (1)

- prefectural capital 413.000 inhabitants.
- suffers from high car ownership, decay of inner city and public transport
- project goal; reduce CO2 by 30% in 2030, 50% in 2050
- investments in Japan's first modern light rail line
- subsidies for housing and relocation to the city centre and around public transport nodes, etc



Toyama city example (2)

- Annual evaluation parameters
 - progress rate of implementation for planned measures,
 - effectiveness of measures; quantifiability
 - change in location patterns (increased share of population living in centre)
 - tram ridership (goal: increase 30% in five years)
 - increase pedestrian flow in city centre
 - CO₂emissions
- Detailed review by panel
- Scored well in first ann. report
- A= Excellent progress
- Cited in 'good practice' case materiel to other cities



Review of ex-2 > Sust. transport transition?

- Program only has focus on one impact (climate) and dimension (environment), even if the measures would affect social and economic dims; some cities do generally monitor other impacts
- Several indicators focus on progress in actions directly under city jurisdiction; hence potential for actionability and learning
- No mechanism from central level to control directly based on the evaluation, although central government support is essential for funding of various projects
- Detailed review by the external panel may further promote learning rather than control function; but is each city unique?

⇒ promising learning oriented approach

⇒ too early to see if genuine transition will be promoted

⇒ narrow scope could jeopardize other sustainability dimensions

Conclusions/perspectives

Conclusions/discussions (1)

- Performance measurement using indicators has been adopted in various programs under Japan's MLIT
- Sustainability is referred to in several of these programs although 'sustainable transport' is not directly measured
- The Policy check-up process may inform a general discussion of sustainability, but hardly a conclusive one
- The eco-model city program monitoring is directly relevant for the environmental dimension of sustainability, and may bring out diagnostic information about effectiveness of planned and adopted policies
- Will lessons transfer?
- Will 'low-carbon' be sufficient focus, or should issues such as accessibility, quality of life, etc also be monitored?

Conclusions/discussions (2)

- For policy check-up in the MLIT, there appear to be limited actionability, also because many indicators on many subjects could point in different directions.
- In the best case the measurements help MLIT manage its programs and develop a deeper understanding of how the various programs and measures function
- In the worst case it decays to a formal or symbolic exercise of high cost and limited use

Conclusions/discussions (3)

- All in all indicators seem to help the promotion of selected aspects of sustainable transport in Japan, but they are not yet a strong tool in this regard
- There may be formal as well as cultural limitations for a strong indicator based transition approach to ST in Japan
- Need for broader and deeper study; international comparisons